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ROLE OF INDIAN HERBAL DRUGS & ITS DIET USED IN THE MANAGEMENT OF NEUROLOGICAL DISORDER

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ABSTRACT

Neurodegenerative diseases, such as Alzheimer's disease (AD) and Parkinson's disease (PD), Depression, Insomnia, Huntigton's, Migraine and Epilepsy are characterized by progressive loss (and even death) of structure and function of neurons, and have created great burden to the individual and the society. The actual cause of various neurodegenerative diseases still remains a mystery in healthcare. Some of the commonly studied environmental factors causes for neurodegenerative diseases are protein degradation, oxidative stress, inflammation, environmental factor, mitochondrial defects, familial history, and abnormal protein accumulation in neuron. However ageing plays a very important role in neurodegenerative diseases. Medicinal plants and natural compounds, such as *Withania somnifera* (Ashwagandha), *Panax ginseng* (Ginseng), *Curcuma longa* (Turmeric), *Baccopa monnieri* (Brahmi), *Ginkgo biloba* (Ginkgo), and *Licyum barbarum* (Wolfberry) have been applied to prevent or alleviate neurological diseases and relief of neurological symptoms reported in in- vivo or in clinical trials. Natural compounds in nano size range as a therapeutic agent possess the same activity as in native state.

KEYWORDS: Neurological disorder, Parkinson's disease, Alzheimer's disease, Huntington's disease, Anxiety, Depression, Insomnia, Migraine, Epilepsy.

INTRODUCTION

Herbal medicines include a range of pharmacologically active compounds: in some cases it is not well understood which ingredients are important for a therapeutic effect. The supporters of herbal medicine believe that isolated ingredients in the majority of cases have weaker clinical effects than whole plant extract, a claim that would obviously require proof

in each case.

Generalizations about the efficacy of herbal medicines are clearly not possible. Each one needs systematic research including a variety of animal studies and also randomized clinical trials. Many of today's synthetic drugs originated from the plant kingdom, and Herbal medicine went into rapid decline when basic and clinical pharmacology established themselves as leading branches of medicine. Nevertheless, herbal medicine is still of interest in many diseases in particular psychiatric and neurological disorders.[1]

There are some reasons for this issue: 1) patients are dissatisfied with conventional treatment; 2) patients want to have control over their health care decision; and, 3) patients see that herbal medicine is congruent with their philosophical values and beliefs. It has been reported that most patients with a mental disorder sought herbal medicine treatment for somatic problems rather than for their mental and emotional symptoms and the best example is somatic symptoms of depression.

Physicians need to understand the biochemical and evidential bases for the use of herbs and nutrients to diagnose and treat patients safely and effectively, to avoid interactions with standard medications, and to provide patients with the benefits of alternative treatments.

Although a multitude of pharmaceutical agents are available for the treatment of mental disorders, physicians find that many patients cannot tolerate the side effects, do not respond adequately, or eventually lose their response. In comparison, many therapeutic herbs have far fewer side effects. They can provide an alternative treatment or be used to enhance the effect of prescription medications.

This review will indicate the quality of the evidence supporting the clinical effects of a number of commonly used types of herbal medicines for psychiatric and neurological disorders as follow:

1) Parkinson's disease
2) Alzheimer's disease
3) Huntington disease
4) Anxiety disease
5) Depression disease
6) Insomnia disease

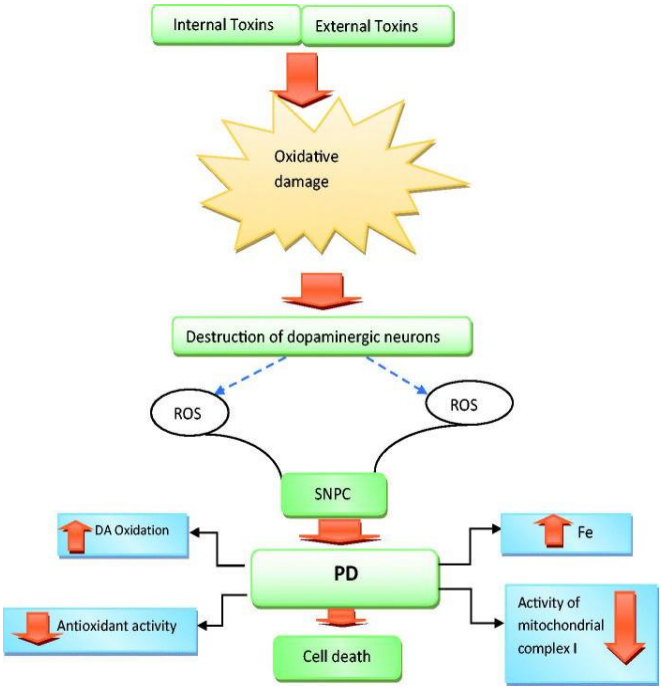
7) Migraine disease

8) Epilepsy

The highest level of confidence derives from well- designed, randomized, double blind controlled studies.

1. PARKINSON'S DISEASE

Parkinson's disease[2] is a chronic midbrain *Substantia nigra* neurological disorder. Dopaminergic neuron is gradually degenerated and causes reduction of the dopaminergic level in Striatum. Tremor, dyskinesia, myotonia and so on are the signs Watched mostly in the individual suffering from the disease.



Herbal Drugs and Their Active Components with Anti-Parkinsonian Activities

The herbal medicines were listed in table 1, which, according to their families, species and part of the plant used in treatment, have been shown to be effective on PARKINSON DISEASE.

➢ ACANTHOPANAX

Acanthopanax from *A. Senticosus* Harms protects C57BL/6 mice against dopaminergic MPTP-induced neuronal damage. B-side Eleuthero, a part of *A. Senticosus* Harms protects the PC12 cells from MPP (+) damage.[3] Extract from the stem bark of ASH prepared with hot water was dissolved in distilled water. A single dose administration of the plant extract

elevated the noradrenaline and dopamine level in the whole brain of rats in a dose dependent manner. A single (or) 2 weeks administration of ASH (500mg/ kg) showed a marked increase in Dopamine level in the striatum and anti parkinsonian activity.[4]

- **CHRYSANTHEMUM**

The *Chrysanthemum indicum L*. the extract is protective against lipopolysaccharide-induced cytotoxicity in SH-SY5Y cellular model and BV-2 microglial cells of Parkinson's disease and 1-methyl-4-phenylpridinium ion.[5] Inhibits the mitochondrial apoptotic process, suppresses ROS aggregation, greatly increases the ratio elevation of Bax / Bcl-2 in SH-SY5Y cells and decreases SH-SY5Y cell death.[5/6] The bud of *Chrysanthemum indicum* was required, sourced from a nearby market and scrutinized for authenticity based on their micro-and macroscopic qualities. The parts were required from *Chrysanthemum indicum* were then obtained by treating it with 70% ethanol over a reflux process of two hours. The Residual parts were then concentrated using high pressure and filtered, lyophilized, and dissolved in 10% dimethylsulfoxide (DMSO). Then the samples were filtered by using a 0.2-μm syringe filter and lyophilized.

- ***WITHANIA SOMNIFERA***

Withania somnifera is commonly used as the Ashwagandha ginseng, Indian. Ashwagandha mitigates the Alterations of movement output and inflammatory neuronal biomarkers in a paraquat-induced rat model of Parkinson's disease.[7] In rotenone formula, Ashwagandha decreases the brain's oxidative stress and with the higher dosage, certain parameters such as nitric oxide have been normalized.[8] Oxidative status in the brain has been enhanced in 6-OHDA. extracting said roots with organic solvent at a room temperature for about 60-75 hours to obtain root extract; removing the solvent from the root extract to obtain dry root extract; treating the dry root extract with 10% methanol-chloroform mixture to obtain *Withania somnifera* plant extract.[9] Oral treatment of PARKINSON DISEASE mice with Ws root extract (100 mg/kg body weight) for 7 days or 28 days elevated DA, DOPAC and HVA levels in the corpus striatum.

- **GINKGO**

Ginkgo Folium is *Ginkgo biloba* L. entire, dried leaf. *G. Biloba* 761 attenuates the neuro degeneration of the nigrostriatal pathway induced by MPTP and has an inhibitory effect on oxidative stress.[10] The neuroprotective effects of a standardized extract of Ginkgo biloba were investigated on 6-hydroxy dopamine (6-OHDA) induced neurotoxicity in the

nigrostriatal dopaminergic system of the rat brain. A significant improvement was observed in rats that were treated with higher doses of *Ginkgo biloba* (100mg/ kg daily) than in those treated with lower doses (50mg/kg) (or) with vehicle. It indicates a possible role for the extract in the treatment of Parkinson's disease.[11]

- **PLUMBAGO**

The *Plumbago scandens* is a plumbago genus. Plumbago's crude ethanolic extract and complete acetate fraction works against Parkinsonism by reducing locomotive operation, catalepsy, and palpebral ptosis.[12] The collected roots were cleaned by washing in running water and then it was cut into pieces and air dried in cold shaded for 20-25 days. The roots were then grinded to powdered form with electrical grinder and was keep in airtight container for further use. In the present study 500g of extract powder was soak in 80% methanol for 4days with occasional stirring with glass rod and at the end of 4th days it was filtered with watt-man filter paper with the help of funnel and the filtered was tested for biochemical components. The effects of crude ethanolic extract (CEE) and total acetate fraction (TAF) of *Plumbago scandens* were investigated at several doses. Both CEE and TAF at doses of 1000 and 2000 mg/kg i.p. suppressed the tremors in a dose-dependent fashion for 60 min. Biperiden, an anticholinergic drug, was used as standard at a dose of 3 mg/kg i.p.

- **OCIMUM**

Ocimum tenuiflorum or tulsi *(Ocimum sanctum). Ocimum sanctum* leaf extract has a neuroprotective effect on a catalepsy caused by haloperidol in albino mice. *O. Sanctum* extract has a neuropro-tective effect on Parkinsonism induced by rotenone and a catalepsy induced by haloperidol in rats and muscle rigidity in mice.[13] the ethanolic leaf extract of *Ocimum sanctum* (dry powder supplied by Natural Remedies.) and the standard drugs, scopolamine and ondansetron were suspended / dissolved in 1% Gum acacia solution while haloperidol was dissolved in distilled water. The number of animals and the treatment received by each group are Chronic study.[14] Scopolamine (1.0 mg/kg), ondansetron In the chronic study, administration of the standard drugs (0.5 and 1 mg/kg) and OS (1.75, 4.25 and 8.5 mg/kg) were given and all doses of the test drug 30 min after the last haloperidol orally whereas haloperidol was given intraperitoneally.[15]

Herbal medicines treating Parkinson's disease

Sr. No	Plant Name	Family /Common name	Chemical constituents	Plant Part	Uses	Remarks
1	*Acanthopanax senticosus* 	Araliceae/ Manyprickle Acanthopanax root	Triterpenoid Saponins, Lignans, Coumarins, and Flavones etc.	root & rhizome	Anti parkinson's, Anti cancer, Anti-Stress etc	Used as adaptogen like P. ginseng
2	*Chrysanthemum indicum* 	Asterceae/Indian Chrysanthemum	Chlorogenic acid, luteolin, and glucoside	Whole plant	Antioxidant, anti-inflammatory etc.	Scattering cold.
3	*Withania somnifera* 	Solanaceae/ Ashwagandha,	Alkaloids, anaferine, withanolides,withaferins,	Root	Anti-Stress agents. Anti parkinson's,	"Adaptogen."
4	*Trifolium pretense* 	Fabaceae/ Red Clover	coumestrol, phytoestrogen	Whole plant	Antiinflammatory Muscle/ Headache	Ornamental plant.
5	*Mucuna pruriens* 	Fabaceae/ Lyon(velvet) bean	Protein, Amino acid, Fatty acid, levodopa	Seed	Antiparkinson's, neuroprotectivea gent	Reduce Stress
6	*Bacopa monnieri* 	Plantaginaceae/ Brahmi	Alkaloid brahmine, Nicotinine, herpestine.	Whole plant	Memory booster, Treated nervous disor.	Small perennial Herbaceous plant
7	*Clausena indica* 	Rutaceae/ Indian Wampi	Myristicin, terpinolene, careen etc.	Leaves	HIV infection, Anti parkinson's drug	Anti-dandruff remedy
8	*Ginkgo biloba* 	Ginkgoaceae/ Ityo, Maidenhair tree	Flavanone, Glycoside, Biginkgosides, etc.	Whole plant	Anti oxidant, Anti Psychiatric disorders	Treat altitude sickness (Prevention)
9	*Centella asiatica* 	Apiaceae/ Hydrocotyle asiatica	Triterpenoids, brahmic acid, centellose etc.	Whole plant	Relieving anxiety, improving cognition.	Medicinal herb used in the orient
10	*Ocimum sanctum* 	Lamiaceae/ Tulsi	Oleanolic acid, ursolic acid, eugenol, carvacrol etc.	Whole plant	Anti parkinson's drug, Cardioprotective etc.	Traditional medicine
11	*Plumbago auriculata* 	Plumbaginacea/ Cape leadwort	Plumbagin,isoshinanolone, plumbagic acid,vanillicacid	Whole plant	Treat a range of ailments,headache.	Ornamental plant
12	*Panax ginseng* 	Araliaceae/ Korean ginseng	Ginsenosides or panaxosides, Arginine etc.	Whole plant	Anti depression agent, Anti parkinson's agent	"Adaptogen"

Allopathic medicines treating Parkinson's disease[16]

Sr no	Drug Name	Category of drug	Dose	Mode of action	Uses	Remark
1	Levodopa/ Carbidopa	Central nervous system agents	100/ 10mg	Dopamine precursor/ Peripheral decarboxylase inhibitors	Antiparkinson's drug, carbonmonoxide poisoning	'Awakening' effect in hepatic coma.
2	Bromocriptine	Dopaminergic Agonists	1.25mg, 5mg TDS	Dopamine agonist	Anti hyperprolactinemia Therapy Parkinson disease	Treatment hyper prolactinemia
3	Selegiline	MAO-B I	5-10mg	MAO-B inhibitors	Anti parkinson's	Protect neurons
4	Rasagiline	MAO-B I	1mg	MAO-B inhibitors	Anti parkinson's	Used to stiffness
5	Safinamide	MAO inhibitor	50-100mg	MAO-B inhibitor and Antiglutamatergic	Anti parkinson's, help improve symptom such as Shakiness,stiffness, and difficulty moving	Treat difficulty moving, walking
6	Amantadine	Adamantanes	200-300mg	Mixed(dopamine release, anticholinergic, NMDA antagonist)	Treat certain influenza infections, Anti parkinsin's drug	Antiviral medicine
7	Biperidene	Anticholinergic	1-12mg	Competitive antagonism of acetylcholine at cholinergic receptors in the corpus striatum	Treat the Stiffness, tremors, spasmsand poor muscle control of Parkinson's disease.	Anticholinergic antiparkinson's agent.

Diet chart for Parkinson

Early morning: Early morning: Drink Lukewarm water 1-2 glass in empty stomach, before brushing teeth.

Diet plan

TIMING	DIET PLAN (VEGETARIAN)
Breakfast (08:30AM)	**1 cup milk + 2-3 biscuit (Fibre Biscuits) / Daliya (**/poha/upma(sujji)/ 1Glass milk with **Turmeric** /fruits (apple, papaya, pomegranate).
Lunch (12:30-1:30PM)	1-2 thin chapatti/Roti (Multi grains Atta) + bowl rice (mand removed) + 1 bowl green vegetables (boiled) + 1 bowl Dal
Snacks (3:30)	1cup herbal Tea + 2-3 biscuit/vegetable soup / 1Glass milk with herbal powder.
Dinner (7:00PM-8:00PM)	2-3 thin chapati/Roti (Multi grains Atta) + 1 bowl green vegetables + 1 bowl moong Daal.

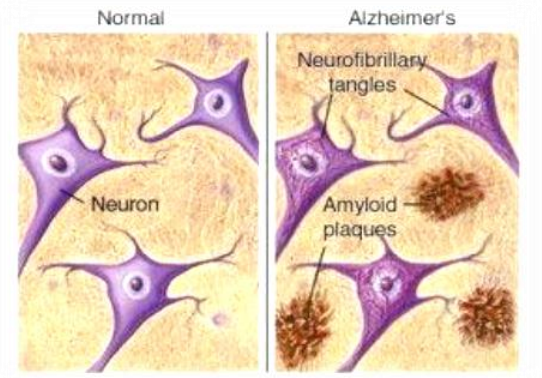
Pathya (Do's)

- **Cereals**: Old rice.
- **Pulses**: Green gram (Moong daal) Arhar.
- **Fruits & vegetables**: lauki (Bottle gourd) Tore (Ridge Gourd), parwal. Karela (Bitter gourd), pumpkin (kaddu), seasonal Green vegetables, drumstick, cabbage, cauliflower, broccoli, spinach, beetroot, apple, papaya, pomegranate.
- **Others**: ginger, castor oil, Hing, Ajwain, Harad, alovera, aprouts, dry fruits, popcorn.
- **Life style**: fasting, rest.

- **Yoga pranayam and Meditation**: 1. Bhastrika 2.Bahyapranayaam 3.Anulom vilom 4. Bhramari 5. Udgeeth 6.Ujjaayi
- **Asanas**: 1. Pashchimottanasana, 2. Sarvangasana, 3. Uttanpadasana, 4. Bhujangasana, 5. Marktasana.

Apathy (don'ts)

- **Cereals:** New Rice, Maeda.
- **Pulses:** kidney beans, black gram, peas, Chhole, urad dal
- **Fruits & vegetables:** jack fruit, brinijal, tomato, potato, orange.
- **Others:** curd, lemon, kadhi, bakery products, junk foods, can foods, execess salt,pori, samisa, chaat, pakodam butter, iceeream,
- **Life style:** Night awakening, day sleeping, suppression of natural urges, stress, anger.
- **Yoga pranayam and Meditation:** As per doctors advise.
- **Asanas:** As per doctors advise.



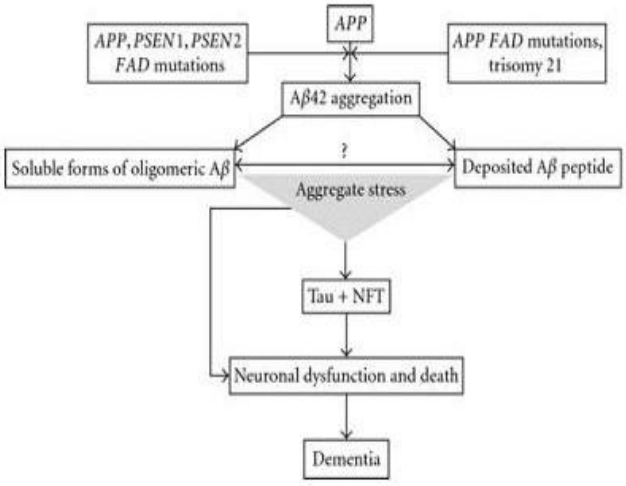
2. ALZHEIMER'S DISEASE

In 1906 Dr. Alois Alzheimer[17] upon his scrutiny identified brain of a woman who lost her life due to some unusual symptoms such as loss of memory, unpredictable behavior, cognitive impairment he then conclude the death was due the presence of neuritic plaques and neuro fibrillary tangles and named the disease as ALZHEIMERS DISEASE. It has been developed into a predominant nerurodegerative disease in the elderly population. A component of healthy nerve cells, Amyloid precursor protein derivative - Amyloid protein deteriorates and lead to the formation of Neutric plaques, they are also called as senile, dendritic or amyloid plaques. Nerve cells along with various other components it consists of twisted protein fibers positioned within nerve cells. These fibers consist of a protein, called tau, which normally occurs in neurons. When incorrectly processed, tau molecules clump

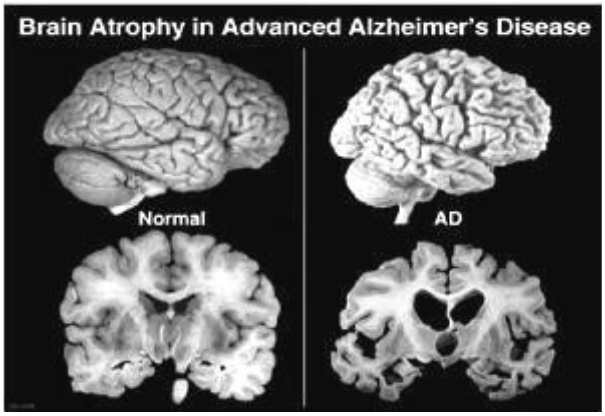
together to form Neuro fibrillary tangles. This disease may be in some way interrelated to brain infection, plaque formation being one or the other excessive in older individuals or abnormal in some other way in persons who ultimately develop Alzheimer disease.

Amyloid cascade hypothesis

Neuro fibrillary tangles (NFTs), *Beta*-amyloid (A*β*), Amyloid precursor protein (*APP*), Presenilin 1 (*PSEN1*), and Presenilin 2 (*PSEN2*) genes.[20]



Formation of senile plaques and NFT'S[19]



Difference between normal and ALZHEIMER DISEASE affected brain[18]

Medicinal plants used in the treatment of ALZHEIMER DISEASE[21,22,23,24]:-Present day therapies are insufficient and have enormous adverse effects. So there is an urgent need for possible alternative treatments for ALZHEIMER DISEASE with minimal or no side effects. Various medicinal plants are suggested to enhance the memory and treat ALZHEIMER DISEASE. Herbal therapy for ALZHEIMER DISEASE has more advantages when compared to currently existing drug therapies with unavoidable side effects. it can also improve the

patients' quality of life as they can be consumed as Nutraceuticals and even any slight increase in dose may not be a problem when consumed. In order to deliver these herbal formulations a proper route of administration must be selected so that they reach the site and show the therapeutic action.

Herbal medicines treating Alzheimer's Disease

Sr. No	Plant Name	Family /common name	Chemical constituents	Plant Part	Uses	Remark
1	*Curcuma longa* 	Zingiberaceae Turmeric	Polyphenolic compounds, curcuminoids, demethoxycurcumin,bisdemethoxycurcumin.	Rhizomes	Anti inflammatory Increases Anti oxidant Prevents cancer Preventing and treating AD	Food additive
2	*Withania somnifera* 	Solanaceae. Ashwagandha	Alkaloids, anaferine, withanolides,withaferins, saponins, sitoindosides	Root	To treat cancer As free radical and anti oxidant For anxiety and depression	"adaptogen"
3	*Ginkgo biloba* 	Ginkgoaceae Ginkgo	Flavanone, Glycoside, Biginkgosides, ascorbic acid, catechin etc.	Whole plant	Treats erectile, dysfunctionTreats, schizophrenia, For premenstrual, and Alzheimer's disease.	Treat altitude sickness (Prevention)
4	*Bacopa monnieri* 	Scrophulariaceae Bhrami Indian pennywort	Alkaloid brahmine, nicotinine, herpestine, bacoside A and B, saponins A,B and C, triterpenoid	leaves	Anti oxidant, Neurodegenerative, disorders As anti epileptic, and sedative properties	Small perennial Herbaceous plant
5	*Panax ginseng* 	Araliaceae Ninjin American ginseng	Ginsenosides or panaxosides, Arginine etc	Whole plant	Useful to treat all kinds of illness Balances the nervous system due to high abundance of vitamin B groups	"adaptogen"
6	*Convolvulus pluricaulis* 	Convolvulaceae Shankhpushpi	Alkaloids, shankhapuspine, convolamine, convoline, convolidine, convosine, convolvine, fatty acid, volatile oils, palmitic acids, linoleic acids,	Flower	Used as brain tonic can reduce hyperthyroidis a anti- convulsing agent Used for hypertension and ulcers Useful for neurodegenerative disorders	Memory booster and Brain tonic.
7	*Centella asiatica* 	Apiaceae Asiatic pennywort Gotu kola	Triterpenoid compound Asiatic acid, madecassic acid, asiaticoside, and madecassoside.	Whole plant	Antioxidant Neuroprotective Regenerates neuronal cells Wound healing	Wound healing
8	*Magnolia officinalis* 	Magnoliaceae Mangolian bark	Magnoloside, crassifolioside, phenylethanoid glycosides, lignans, alkaloids.	Bark	Cancer risk reduction Treats insomnia Treats anxiety For anti inflammatory activity	Treatment of anxiety

Allopathic medicines treating Alzheimer's Disease

Srno	Drug Name	Category of drug	Dose	Mode of action	Uses	Remark
1	Donepezil	Cholinesterase inhibitor	5mg po daily	Prevents the breakdown of acetylcholine in the brain	treats some of the symptoms of Alzheimer's disease, Parkinson's disease or dementia	helps with some types of dementia
2	**Galantamine**	Cholinesterase inhibitor	4mg po twice daily	Prevents the breakdown of acetylcholine in the brain and stimulates nicotinic receptor to release more acetylcholine in the brain.	Treat symptoms of mild-to-moderate Alzheimer's disease.	Improve memory, Awareness.
3	**Rivastigmine**	Cholinesterase inhibitor	1.5 mg po twice daily	Prevents the breakdown of acetylcholine and butyryl choline in the brain	Used to treat confusion (dementia) related to Alzheimer's disease and to Parkinson's disease.	Improve memory, Awareness.
4	**Tacrine**	Cholinesterase inhibitor	10mg po 4 times daily	reversible inhibition of acetylcholinesterase (AChE),	used to treat the symptoms of mild to moderate Alzheimer's disease	It cause nausea/vomiting
5	**Memantine**	N-methyl-D-aspartate antagonist	5mg po daily	Block the toxic effects associated with excess glutamate and regulate glutamate activation	Used to treat the symptoms of Alzheimer's disease, Decreasing abnormal activity in the brain.	Decreasing abnormal activity in the brain.

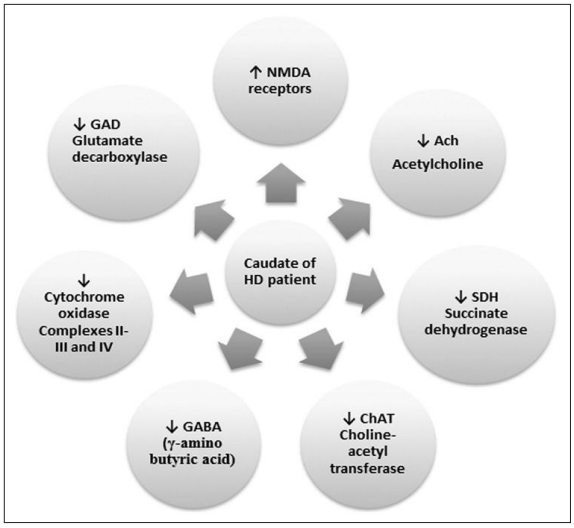
3. HUNTINGTON DISEASE

George Huntington, an Ohio physician, first described Huntington's chorea or Huntington's disease[25] (HD). It is an autosomal dominant inherited neurodegenerative disorder characterized by progressive motor dysfunction, incuding chorea and dystonia, emotional disturbances, memory, and weight loss.[26-28] The pathological alterations mainly affect the medium spiny neurons (MSNs) of striatum, andto lesser extent of cortex. There is also loss of amino butyric acid (GABA) and enkephalin neurons of basal ganglia in HD[27,29] along with modifications in the number of N-methyl-D-aspartate (NMDA) receptors.[30] Death normally occurs 15-20 years after the first appearance of symtoms[31] various biochemical alterations found in the caudate of patients with HD include decreased GABA and acetylcholine (ACh) levels and their synthesizing enzymes glutamate decarbixylase (GAD), and choline-acetyl transferase (CAT), respectively. There is also a decrease in the concentration of certain peptides that are present specifically in middle-sized spiny neurons.[32,33]

➢ ***CURCUMA LONGA***

Curcuma longa (CL), commonly known as Haldi or turmeric, is a perennial herb of family Zingiberaceae. Its rhizomes have been used since ages in the traditional medicinal system of India, China, Japan, and other South Asian countries.[34] It has a long history of use as a spice and a household remedy for the treatment of inflammation, skin diseases, wounds, and as an antibacterial and antiseptic.[35]

It showed neuroprotective action in various neurological disorders. Curcumin and manganese complex of curcumin offer protective action against vascular dementia by virtue of its antioxidant activite, and is useful in the treatment of aging and memory dysfunctions.



➢ **GINSENOSIDES**

Ginseng root is a well-known herbal medicine and has been used as a representative tonic. Ginseng has been used primarily as a tonic to revitalize weak bodies and help the restoration of proper metabolism in the body. Various studies (in vitro and in vivo) have exhibited beneficial effects of ginseng in several pathological conditions such as cardiovascular diseases, CNS disorders, cancer, immune deficiency, and hepatotoxicity. It has also been reported that ginseng and some of its active constituents also exert beneficial effects on aging and neurodegenerative diseases.

➢ ***CENTELLA ASIATICA*** **(syn. Hydrocotyle asiatica)**

Centella asiatica (CA), commonly known as Gotu kola, Indian Pennywort and Jal brahmi, belongs to family Umbelliferae. It has been categorized as Rasayanas in Ayurveda due to its ability to improve memory and age related brain disorders.[36] Studies have shown various

neuropharmacological effects of CA which comprises of memory enhancement, increased neurite elongation and acceleration of nerve regeneration. It also possesses anti-oxidant property.[37,38]

- **Sesamol**

Sesamum indicum Linn. (Pedaliaceae), commonly known as sesame, has been used as a health food in India and other East Asian countries. Sesamol, oneof the main constituents in sesame oil, is responsible for its antioxidant activity. Sesamol has shown to control increased blood pressure, hyperlipidemia and lipid peroxidation (by increasing enzymatic and non-enzymatic antioxidants)[39], and a strong antitumor action. It also attenuated 3-NP-induced Huntington-like behavioral, biochemical, and cellular alterations in rodents. It also protects against 3-NP-induced memory impairment, oxidative stress, neuro-inflammation in hippocampus neurons, and consequently improves synaptic plasticity and neurotransmission.[40] It also inhibits nitrite production and inducible NOS expression in the liver of septic rats. Protective effect of sesamol against 3-NP induced HD like symptoms can make it a lead molecule against HD.

Herbal medicines treating Huntington's disease

Sr. No	Plant Name	Family /common name	Chemical constituents	Plant Part	Uses	Remarks
1	*Curcuma longa* 	Zingiberaceae Turmeric	Polyphenolic compounds, curcuminoids, demethoxycurcumin, bisdemethoxycurcumin.	Rhizomes	Increases Anti oxidant Preventing and treating AD and Huntington disease	Food additive
2	*Tripterygium wilfordii* 	Celastraceae Celastrol	Triterpenoid quinone methide, pentacyclic triterpenoid,	Root	Treatment of Crohn's disease and huntington disease	Inhibits cancer cell progression
3	*Panax ginseng* 	Araliaceae/ Korean ginseng	Ginsenosides, gintonin, ginseng saponins, organic acid vitamins, minerals etc.	Root	Antimicrobial and antifungal properties, anti huntington disease.	Energy drinks
4	*Centella asiatica* 	Umbelliferae Indian Pennywort	Triterpenoid compound Asiatic acid, madecassic acid, asiaticoside, and madecassoside.	Whole plant	Anti leprocy, diuretic, stomachic and used in insomnia, huntington	Wound healing

5	*Sesamum indicum* 	Pedaliaceae Sesame	Sesamol, sesamolin and sesamin.	Seed	Management of huntington's disease	Food and Flavouring
6	*Centella asiatica* 	Apiaceae *Asiatic pennywort Gotu kola*	Triterpenoid compound Asiatic acid, madecassic acid, asiaticoside, and madecassoside.	Whole plant	Antioxidant Neuroprotective Regenerates neuronal cells Wound healing	Wound healing

Allopathic medicines treating Huntington's disease

Srno	Drug Name	Category of drug	Dose	Mode of action	Uses	Remark
1	**Xenazine**	Mono amino depletors.	12.5/25mg po qDay	Reversible high-affinity inhibi-tor of mono- amine uptake into granular vesicles of pre synaptic neurons by binding selectively to VMAT-2	Treatment of chorea associated with Huntington's disease	Reduce Chorea
2	**Heloperidol**	Conventional anti psychotics	2-80mg daily	Block postsynaptic dopamine (D2) receptors in the meso-limbic system of the brain.	Treat certain mental/ mood disorders.	Decreased Chorea
3	**Fluphenazine**	Phenothiazines	<100mg	Blocking postsynaptic dopamine D2 receptors in the limbic, cortical system and basal ganglia.	Treat certain mental/ mood problems (chronic chizophrenia)	Manage behavioral problems in patients
4	**Resperidone**	Atypical Anti psychotics	25mg	Decrease dopaminergic and serotonergic pathway activity in the brain.	Anti Huntington's and Neuropsychiatric disorder	Improve motor and psychiatric functioning.
5	**Olanzapine**	Atypical Anti psychotics	11.4+/-8.5mg/day	The compound is known to block or antagonize two types of key neural receptors; the D2 dopamine receptor and the 5HT2A serotonin receptor.	Treat psychotic condition such as schizophrenia and biplar disorder (manic depression)	Antipsychotic medication.
6	**Quetiapine**	Atypical Anti psychotics	25mg	Antagonism of dopamine type 2(d2) and serotonin 2A (5HT2A) receptors.	Improve behavioral symtoms and may decrease chorea, uncontrollable etc.	Antidepressants to treat depression.

4. ANXIETY DISEASE

Stress and anxiety[41] are common psychiatric manifestations of the modern world and lifestyles. In small quantities, stress and anxiety are good; they can motivate and help one be more productive. However, too much stress, or a strong response to stress, is harmful. It can set up for general poor health as well as specific physical or psychological illnesses like infection, heart disease, or depression. Persistent and unrelenting stress often leads to anxiety and unhealthy behaviours.

Anxiety is a Central Nervous System disorder.[42,43] Anxiety is a common emotional phenomenon in humans.[44] Anxiety is an emotional state, unpleasant in nature and is associated with uneasiness, discomfort and concern or fear about some defined or undefined future threat.[45] Anxiety is considered to be a normal reaction to stress and is characterized by heart palpitations, fatigue, nausea and shortness of breath. Anxiety is the most common mental illness affecting one eighth of the total population and has become a very important area of research in psychopharmacology in the current decade.[46]

Anxiety disorders are psychiatric disorders affecting nearly 25% of the adult populationat some point in their life. The prevalence of anxiety disorders is 30.5% and 19.2% in women and men respectively. The prevalence of anxiety disorders isremarkably high in young people. Children aged 7 to 11 years reported a 15.4% prevalence rate of anxiety disorders. A survey has also stated that less than 14% of people with such psychiatric disordersreceive treatment.[47] Anxiety can aggravatemany physical and mental ailments and alsoimpede recovery from any other problems.

Herbal medicines treating Anxiety disease

Sr. No	Plant Name	Family / common name	Chemical constituents	Plant Part	Uses	Remark
1	*Abies pindrow Royle* 	Pinaceae Abies webbiana	The fresh leaves yield 0.25% oil which contains α-pinene (14.7%), l-limonene (10.6%), Δ3-carene (11.8%), dipentene (8.4%), l-bornyl acetate (15.7%) and l-codinene (9.9%).[	Leaves	Anti-inflamatory, analgesic, Antistress activity and Anti anxiety activity	Antistress-adaptogenic activity.
2	*Achillea millefolium. L.* 	Asteraceae Common yarrow	The herb contains an alkaloid achilleine, isovaleric acid, salicylic acid, sterols asparagines, flavonoids, tannins, choline and trigonelline and coumarins. Flowers yield an essential oil azulene.	Flowers, leaves, and stems	Anti inflammatory activity Antioxidant activity, Anticancer activity Anti anxiety activity	Folk medicine and Antiulcer activity

3	*Actaea spicata* 	Ranunculaceae Baneberry	Alkaloids, isoquinoline alkaloids magnoflorine, corytubrine; triterpene glycosides including actein and trans-aconitic acid.	Whole plant	Treatment of rheumatism, inflammation, nervous disorder and Anti anxiety activity.	Antioxidant activity
4	*Albizia lebbeck (L) Benth* 	Fabaceae Siris Tree	The leaves have been shown to contain caffeic acid, alkaloids, kaempferol and quercetin	Leaves	Anti anxiety,Anti-inflammatory, anti-diarrhoal, anti-tubercular	Treat Abdominal tumors
5	*Cecropia glaziovii sneth* 	Cecropiaceae C. macranthera	Cannabidiol an cannabinoid exerts anti-anxiety effects	Leaves	Antioxidant, antiinflammatory	Folk medicine
6	*Citrus aurantium. Linn***.** 	Rutaceae Bitter orange	4-methulacetophenone, carotenoids, and essential oil containing monoterpenes sesquiterpenes, coumarins, caffeine isoquinoline, alkaloids, flavonoids, triterpenoids and Steroids.	Fresh peels	Antioxidant, anti-inflammatory, anti inflammatory, antispasmodic effects	Essential oil in foods and perfumes.

- **Abies pindrow Royle (Family Pinaceae)**

The aerial parts of Abies pindrow have been used by elevated plus maze model (EPM).[48]

Properly identified A. pindrow aerial parts were successively and exhaustively extracted using solvents in increasing order of polarity viz., n-hexane, chloroform, methanol and water.

All crude extracts were subjected to antianxiety activity at the doses of 100, 200 or 400 mg/kg, p.o. in mice. Efficacy of A. pindrow was statistically compared with the standard anxiolytic drug, diazepam (2 mg/kg, i.p.). Amongst various extracts, chloroform and methanol extract exhibited significant antianxiety activity with respect to control and statistically equivalent to the standard drug at the dose of 200 and 400 mg/kg, respectively.[49]

- **Actaea spicata L.(Family Ranunculaceae)**

The preliminary anti-anxiety screening studies were done with Actaea spicata, with a view to Ascertain the verity of its traditional use as an anxiolytic. The roots of the plant were extracted using solvents in order of increasing polarity viz., petroleum ether(60-80 C), chloroform, methanol and distilled water. All the crude extracts were evaluated for anti-anxiety activity in mice using elevated plus maze apparatus. Among all these extracts, only methanol extract exhibited significant anti-anxiety activity at a dose of 100 mg/kg in mice with respect to control as well as standard (diazepam, 2 mg/kg).[50]

- **Albizia lebbeck (Siras): (Family-Fabaceae)**

Albizia lebbeck (Linn.) Benth. is a medium to large sized tree distributed throughout India.

The effect of saponin containing, n- butanolic fraction (BF), extracted from dried leaves of Albizia lebbeck, was studied on cognitive anxiolytic activity of BF (0, 10,25 and 50 mg/kg) was assessed by studying its effect on the duration of occupancy in the closed arm. Animals treated with BF (25 mg/kg) spent more time in the open arm in a dose-dependent manner.[51]

- **Brassica oleracea (Family-Brassicaceae)**

This is an edible green vegetable plant belongs to Brassicaceae family in which flower head is eaten as a vegetable. Like other species of the Brassica family, broccoli is very rich source of behavior and anxiety in albino mice. The health promoting phytochemicals. It is rich in phenolic compounds, particularly flavonoids. It also contains ascorbic acid, vitamins C and E, amino acid, the flavonols quercetin and kaempferol, the carotenoids b-carotene, lutein and the glucosinolate. From the research study, it is concluded that hydro-alcoholic extract of Brassica oleracea after acute dosing possess significant anxiolytic activity at dose of 200 mg/kg. The petroleum ether extract was devoid of anti-anxiety effect. Further studies are being conducted to ascertain the bioactive constituent responsible for the activity.[52]

Alopathic medicines treating Anxiety disease[53]

Sr no	Drug Name	Category of drug	Dose	Mode of action	Uses	Remark
1	**Diazepam**	Benzodiaze pines	5-30 mg daily	Facilitating inhibitory gamma amino butyric acid(GABA) transmission	Preferred in Acute panic states and anxiety associated with organic disease	Treat seizures
2	**Oxazepam**	Benzodiaze pines	30-60 mg	Facilitating inhibitory gamma amino butyric acid(GABA) transmission	Used mainly in short lasting anxiety states	Used Relieve anxiety
3	**Chlordiaze-poxide**	Benzodiaze pines	25-100 mg	Facilitating inhibitory gamma amino butyric acid(GABA) transmission	Preferred in chronic anxiety states and poor anticonvulsant action.	Relieve fear / anxiety be-fore surgery
4	**Buspirone**	Anxiolytics	5-15 mg	Partial agonists of 5-HT_{1A}receptors	Anti anxiety drugs	antidepressio n drugs
5	**Propranolol**	Beta-blocking drugs	10-80 mg	Peripheral beta-blockade	Treat high blood pressure, Anti anxiety drugs. Prevent heart attacks.	Prevent future heart disease.

5. DEPRESSION DISEASE

INTRODUCTION

Depression[54] is a condition of no mood and loss of interest to activity that can lessen a person's thinking, conduct, tendencies, emotional state, and sense of well-being which has shown morbidity worldwide.[55] It has even reported as one of the prevailed psychiatric

disorders which have been estimated as the second most significant contributor to neurological diseases and disability worldwide. According to the World Health Organization Global Burden of Disease, depression has been predicted to become the second cause of long-term debility in 2020 and the primary cause by 2030.[56] Depression is one of the highly prevailed neuropsychiatric disorders which has 40.5% of all disability attuned life years caused due to mental pathologies.[57]

Major depressive disorder is a mental disease with clinical manifestations indulging anorexia, insomnia, loss of interest, and continuous sadness, where in contrast there may be hyperphagia, and motor agitation in addition. Depression can be managed by medications (pharmacological treatment), psychotherapyand electroconvulsive therapy.

One potential method also involves the use of medicinal herbs and phyto-chemicals that provide therapeutic benefits with minimal adverse drug reaction[58]. The genetic factors have the effect of 30–40% in depression. Other factors contribute to 60–70% to depression. Non-genetic factors are mainly socio economical causes which affect the population ranging from 15 to 45 years including marital problems, divorce, lifetime trauma, low social support, interpersonal adversities, childhood sexual abuse, and loss of loved ones.[59]
Depressogenic effects mainly can be gender specific with the high alterations in the average level such as men get affected by separation, work difficulties, and low income.

Types Depression[60]

Persistent depression

It is the mood that lasts for couple of years maybe two or three. Patients diagnosed with this depression have various symptoms with long term effects on behavior.

Postnatal depression

After getting a baby some women will get this type of depression. It is also called “Baby Blues”. It is comparatively a lite depression and anxiety that clears within two weeks after delivery.

Bipolar depression

It includes the extremely low moods and euphoric or irritable conditions hence it is called It includes the extremely low moods and euphoric or irritable conditions hence it is called Maniac depression.

Seasonal effective disorder

It is also known to be "winter depression". Usually occurs during winter season due to less light. It is mainly occurred with weight gain, increased sleep, and social withdrawal.

Medicinal herbs used in the treatment of depression

Herbs are one of the basic sources of medication used in ancient medicine. It is gaining one of the main prominences in the treatment of depression. Moreover, many studies have shown that there was an improvement in depression with the treatment of herbal medication. Some medicinal herbs have shown the effects as that of the anti depressants lately. The psycho pharmacological actions against the nervous system by the medicinal herbs also have the same effects as that of the antidepressants which help in regulating the serotonin, dopamine, and noradrenaline reuptake, where it also helps in the MAO inhibition and modulation of neuroendocrine system along with hypothalamic-pituitary-adrenal (HPA) axis[61], there are some of the herbal medication which has been listed below and can be used in the treatment of depression.

- **Curcumin[62]**

Curcumin is a key active constituent of *Curcuma longa*. This yellow natural phenol has been used historically in Oriental medicine; its potential medicinal properties are under investigation.[63] Curcumin oral administration exhibited low levels in tissues and plasma, rapid metabolism, and extensive rapid excretion.[64] 400 milligrams of a curcumin extract three times a day, 445 milligrams of a standardized supplement 2 to 3 times a day, 1tsp of the dried herb in a cup of warm milk daily, 1tsp to 1 tbsp of a liquid extract divided into several dosages over the course of a day, or 1/8 to ¼ tsp of turmeric tincture 3x a day. Our body will absorbed more curcumin if we take it with lots of black pepper. curcumin (10 and 20mg/kg, PO) can reverse 5-HT1A mRNA alteration in rat hippocampus.[65] Additionally, Hurley et al. demonstrated that the antidepressant action of curcumin may be related to the increase of hippocampal brain-derived neurotrophic factor closely implicated in the pathophysiology of depression.[66]

- **Ferulic Acid**

Ferulic acid is phytochemical that is known to have powerful antioxidant capacity.[67] This compound is derived from phenylalanine, which is converted to 4-hydroxycinnamic acid and then caffeic acid and has shown various medicinal actions including antiinflammatory, antitumor, antidiabetic, and neuroprotective properties.[68,69] Yabe et al. found that oral.

Administration of ferulic acid (100 and 250mg/kg) can mitigate stress induced abnormal behavior in mouse depression model. Moreover, they demonstrated that ferulic acid can enhance phosphorylation of CREB and brain-derived neurotropic factor mRNA level in the hippocampus.[70]

- **Quercetin**

Quercetin is a polyphenolic flavonoid found in many fruits, vegetables, and medicinal herbs. This flavonol has been reported to inhibit the oxidation of other molecules by acting as a scavenger of free radicals that are responsible for oxidative chain reactions. Quercetin is a nonspecific protein kinase enzyme inhibitor but it activates estrogen receptors. In preclinical studies, quercetin (20–40mg/kg,PO) prevented depression-like behaviors resulting from hyper activation of the hypothalamic–pituitary–adrenal(HPA)axis in mice.The effect was compare able with fluoxetine (10–20mg/kg,IP).[71]

- ***Camellia sinensis* (GreenTea)**

Leaf of Camellia sinensis is a source of green tea. Green tea has shown anticancer, antifibrotic properties, anti-inflammatory, and antineuro degenerative activities. Recently, preclinical study demonstrated polyphenols (5, 10, and 20mg/kg PO for 7 days) obtained from Camellia sinensis improved depression-like behavior and decreased serum level of corticosterone. These results suggest that green tea poly phenols can regulate the HPA axis involved in the pathology of depression.[72]

Herbal medicines treating depression disease

Sr. No	Plant Name	Family / common name	Chemical constituents	Plant Part	Uses	Remark
1	*Thymus vulgaris L* 	Lamiaceae Carvacrol	Thyme essential oils, thymol, cineol, cymene, borneol, thyme extract.	Flowers, leaves, oil	Anti-bacterial, Anti cancer, Anti depression activity.	Skinconditions especiallyfungus infections
2	*Curcuma longa* 	Zingiberaceae Turmeric	Polyphenolic compounds, curcuminoids, demethoxycurcumin, bisdemethoxycurcumin.	Rhizomes	Anti inflammatory Increases Anti oxidant Prevents cancer Preventing and treating Depression	Food additive
3	*Camellia sinensis*	Theaceae Green Tea	Alkaloids, caffeine, theo bromine, theophylline ,gallic acid, catechins,	Buds, leaves	Used in Aches, pain, fever, Depression, inflammation etc.	Skin disorder

			epicatechin etc.			
4	*Rhodiola rosea* 	Crassulaceae Golden Root	Rosavin, salidroside, rosin, rosarin, anthraquinones, Alkaloids, tyrosol.	Root	Anti depression and anti anxiety drugs	Adaptogen
5	*Lavandula angustifolia* 	Lamiaceae Lavender	Essential oil, geraniol, caryo -phyllene, lavandulyl acetate, linalool**,** linalyl acetate	Whole plant	Anti depression and anti anxiety drugs, anti stress.	Alopecia (hair loss)
6	*Nelumbo nucifera* 	Nelumbonaceae Kamal(Lotus lily)	Embryo, saponin, alkaloids, poly phenolics, carbohydrates	Whole plant	Anti depression and anti inflammatory, anti anxiety drugs, anti stress.	Anti diabetic property

Allopathic medicines treating Depression disease[73]

Srno	Drug Name	Category of drug	Dose	Mode of action	Uses	Remark
1	**Fluoxtine**	Selective serotonin reuptake inhibitors	20-40mg	Inhibit reuptake specifically of serotonin by binding to SERT(Serotonin transporter)	Treat depression, obsessive-compulsive disorder	Treat panic attacks
2	**Duloxetine**	Serotonin Noradrenalin Reuptake Inhibitors	30-80mg	Inhibit reuptake of both 5HT and NA by acting on SERT and NAT. Anti H_1, H_2 histaminic receptors, Anticholinergic.	Treat depression and anxiety.	Treat nerve pain, Stress.
3	**Amitriptyline**	Tricyclic antidpressant	50-200mg	Inhibit reuptake of both 5HT and NA by acting on SERT and NAT, Anti H1,H2 histaminic receptors, anticholinergic.	Treat depression and anxiety. Prevent migraine attacks, treat nerve pain and back pain.	Treating Pain
4	**Moclobemide**	MonoAmine Oxidase inhitors	150mg BD-TDS	Conventional (rarely used) New Reversible MAO-inhibitors	Treatment of major depressive disorder and bipolar disorder.	Treat certain types of mental depression
5	**Bupropion**	Atypical Antidepressants	150-300mg	Dopamine reuptake inhibitor	Treat major depressive disorder and seasonal affective disorder	Treating anxiety
6	**Paroxetine**	Selective serotonin reuptake inhibitors	20-50mg	Inhibit reuptake specifically of serotonin by binding to SERT(Serotonin transporter)	Treat depression, obsessive-compulsive disorder	Treat post-traumatic stress disorder

6. INSOMNIA DISEASE

Sleep is considered an active biological process and fundamentally required to promote health and well-being.[74] Insomnia is defined as a sleep-wake disorder; characterized by difficulty in initiating sleep, staying asleep and/or by waking early in the morning and being unable to get back to sleep.[75]

Despite its high prevalence, insomnia often goes unrecognized and remains untreated. Insomnia also negatively affects health and well-being, with daytime impairment of cognition, mood, or performance that impacts not only on the person, but also family, friends, co-workers and caretakers.[76] Furthermore, people experiencing insomnia are also more likely to visit hospitals and physicians, have greater absenteeism, are more susceptible to traffic accidents and have more fatal road accidents.[77,78] Studies have also shown that insomnia is linked to a range of chronic diseases, including an increased risk of Obesity[79], type-2 diabetes, heart disease, disturbances in mood, concentration and memory and an increased risk of mortality.

There are a range of treatment approaches for insomnia, which have been researched, and can be separated into three key areas:

i. Non-pharmacological approaches: cognitive behavioral therapy for insomnia (CBT-I) and sleep hygiene.[80]
ii. Pharmacological interventions including: short-term benzodiazepines.[81]
iii. Complementary and alternative medicines: ingestive (such as supplements and herbal medicine) and manual therapies (including massage, kinesiology).

Herbal medicines treating insomnia disease[82]

Sr. No	Plant Name	Family / common name	Chemical constituents	Plant Part	Uses	Remark
1	*Acorus calamus L.* 	Acoraceae Vacha	Essential oil, resin, asarone, calacone, acorin, starch and tannin.	root and rhizome	Prolonged the sleeping	Effective in neurological disease.
2	*Bacopa monneria* 	Scrophulariaceae Brahmi	Brahmin (Alka;oid) herpestin. Beutalic acid, stigmesterol, monnierin, hersaponin, bacoside A and B on acid.	Fresh leaves $ stem	As a nervine tonic, asthama, epilepsy, insanity(madness), Anti insomnia drug	Anticancer activity

3	*Azadirachta indica* 	Meliaceae Nimba	Nimbin, nombosterol, nimbosterol, azadiradione, vepinin, azadirachtin, quercetin, fraxinellone,	Fresh or Dried leaves $ seed oil	Anti inflammatory, analgesic and antipyretic activity, Anti insomnia activity	Antioxidant activity
4	*Cassia fistula Linn.* 	Fabacae Aragwadha	Anthraquinones, flavonoid and flavan3-ol derivatives, $ Alkaloid, terpenoids, saponins.	Fruit $ seed pulp $ root	Used in reliving asthma, leprosy, ringworm, fever $ heart related disease.	Prescribed as emetics, purgatives.
5	*Cedrus deodara* 	Pinaceae Devadaru	Cedeodarin, ampelopsin, cedrin, cedrinoside, and deodarin.	Whole plant	Useful in neurological disorders, asthma, fever infested wounds.	Deodare oil is also used in ar thritis, headache

Allopathic medicines treating Insomnia disease

Srno	Drug Name	Category of drug	Dose	Mode of action	Uses	Remark
1	**Doxepine**	Anti depressants	10-50 mg	5HT receptor antagonism	Treatment of insomnia due to sleep maintenance,	Treat depression
2	**Triazolam**	Benzodiazepines	0.25-0.5mg	GABAa receptor agonists	Short-term treatment of insomnia	Treat insomnia
3	**Zolpidem**	Z-Drug (Non benzodiazepine)	5-10mg	GABAa1 receptor agonists	Insomnia due to sleep onset or sleep maintenance	Treat insomnia
4	**Trazodone**	Anti depressants	50-100mg	5HT receptor antagonism	None- indicated for treatment of depressive disorder.	Treat depression
5	**Ramelteon**	Melatonin receptor agonists	8mg	Melatonin receptor agonists, drug acts at the MT1 and MT2 receptors to promote sleep	Insomnia (chronic or transient) due to sleep onset.	Treat of insomnia
6	**Zaleplon**	Z-Drug (Non benzodiazepine)	10-20mg	GABAa1 receptor agonists	Short- term treatment of insomnia	Hypnotics medication

7. MIGRAINE DISEASE

What is Migraine

Migraines are a recurring type of headache. They cause moderate to severe pain that is throbbing or pulsing. The pain is often on one side of our head. We may also have other symptoms, such as nausea and weakness. We may be sensitive to light and sound.

Clinical features: Men have lower risk (6%) of migraine when compared with women (18%). This is usually due to fluctuation in hormones especially estrogen level in women. Migraines usually commence in teenagers or in between the age of 35 to 45 years.

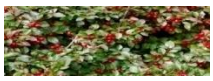
Migraine is of two major subtypes

1. Migraine with aura: Ephemeral neurological signs that generally accompanied headache are usually associated with this type of migraine. Before some hours or days of headache premonitory phase can be experienced by some patients. Premonitory symptoms comprises of depression, yawning, hypoactivity, hyperactivity, desire for particular foods, fatigue, neck pain or stiffness.

2. Migraine without aura: In this headache generally accompanied symptoms such as severe or moderate pain in unilateral location, which gets intensified by routine physical work, headache, vomiting, nausea and/or or phonophobia and photophobia.

Herbal medicines treating Migraine disease

Sr. No	Plant Name	Family / common name	Chemical constituents	Plant Part	Uses	Remark
1	*Mentha Pipertia L.* 	Labiatae Peppermint	Volatile oil, Menthol, Tannins, Menthone, Cineole, Resins, Azulene, Limonene	Leaves	Treatment of Migaine headache, treat Nausea, bad breath and reduce dental plaque.	Reduce spasm and pain caused by endoscopy.
2	*Zingiber officinale* 	Zingiberaceae Ginger	Gingerols, Shogaols, Paradols, Terpene components, Vitamins, Protein etc	Rhizome, Fresh $ Dried Root	Headache, Stomach Pain, Nausea, Cold and flu symptoms, Neurological Problems	Regulate Heart beat
3	*Coffea Arabicaa L.*	Rubiaceae caffeine.	Caffeine, Lignin, caffeine, Triagonelline,	Dried Ripe Seeds	Headaches, high blood pressure, stomach	Mainly used headache and Migraine

			Volatile acid, Wax, oil, Minerals etc.		problems, sexually transmitted diseases, cancer, circulatory problems	
4	*Coriandeum Sativum L.* 	Umbillifereae Coriander	Essential oils, linalool, Geraniol, camphor, Oleic acid, palmitic acid, Ascorbic acid.	Fresh Seeds	treat ailments that ranged from allergies to diabetes to migraine, relieve sinus pressure and headaches	Coriander seeds can be chewed and used in food or teas.
5	*Gaultheria Procumbens* 	Ericaceae Teaberry	Methyl salicylate, Oleanolic acid, Methyl benzoate, Ursolic acid	Leaves	Treat neuralgias and headaches as well as stomach pain and vomiting.	anti-inflammatory properties
6	*Lavandula angustifolia* 	Lamiaceae/ lavenders	Essential oil, lavandin, lavendula	Flowers	Benificial in a variety of condition, including insomnia, alopecia, anxiety, stress, headache and migraine.	Anti viral and Anti bacteria Properties

Alopathic medicines treating Migraine disease

Srno	Drug Name	Category of drug	Dose	Mode of action	Uses	Remark
1	**Propranolol**	Beta blockers	20mg Twice daily	Competitively blocks both Beta1, Beta2 adrenergic receptors	Prevention of migraine, Treat of High blood pressure, Irregular heart rhythms	Avoid in Asthma
2	**Flunarizine**	Calcium channel blockers	5-10mg at bed time	Inhibits the influx of extracellular calcium through myocardial and vascular membrane pores.	Prevention of migraine headches and migraine attack.	Reduces smooth muscle spasm.
3	**Amitriptyline**	Antidepressents	10mg at bed time	Inhibits Norepinephrine and serotonin uptake and increase Serotonin in our Brain.	Efficacy in migraine prevention	Pain relief

4	**Metoprolol**	Beta blockers	50mg Twice daily	Blocking the action of certain natural chemicals in our body.	Prevention of migraine, Treat of High blood pressure, Prevent chest pain.	Avoid in Asthma
5	**Trazodone**	Antidepressents	1mg/kg/day, TID, PO	Reduces levels of neurotransmitters associated with arousal effects	Treatment of headache.	Treating symtoms of anxiety and pain

Diet chart for CNS/Neurological Disorders (Migraine)/Headache

Early morning: Drink Lukewarm water 1-2 glass in Empty stomach, before Brushing teeth, Drink Amla + Aloe Vera juice before Breakfast.

Diet plan

TIMING	DIET PLAN (VEGETARIAN)
Breakfast (08:30AM)	**Milk 1 cup herbal tea with milk + 2-3 biscuit/less salted Daliya (salted) /poha /Upma(Sujji)/Cornflax/Sprouts/ 2thin roti (Multi grains Atta) +** 1 bowl vegetable, 1 plate fruit salad (Apple, papaya, mango, pomegranate, grapes, orange, cherries & water melon**).**
Lunch (12:30-1:30PM)	2-3 thin chapati. Roti **(Multi grains Atta)** + 1 bowl rice (mand removed) + bowl green vegetables (boiled) + 1 bowl daal (diluted with water) + 1 plate salad.
Snacks (5:30-6:00PM)	**1 cup herbal tea + 2-3 biscuit (Vegetable soup).**
Dinner(7:00PM-8:00PM)	2-3 thin chapati/Roti **(multi grains Atta) +** 1 bowl green vegetables (mostly fiber rich) + 1 bowl daal (diluted with water).
30 Min. before Sleep-10:00PM	1 glass milk with **Ashwagandha churna.**

Pathya (Do's)

- **Cereals:** wheat, Barley, Millet.
- **Pulses**: Horse gram (kulath), Moong daal.
- **Fruits & vegetables**: Green vegetables, punarnava, drumstick (sahijan) cabbage, cauliflower, broccoli, spinach onion corn, mango, pomegranate, grapes, Turmeric, Apple, papaya, orange, cherries, water melon.
- **Others**: Castor oil, Heeng, Ajwain, Termeric, Ginger, Methi, Garlic, vinegar, sesame, clarified butter, oil, Milk, coconut water, Green tea, olive oil, almonds, Ginger, flax seed (Alsi seeds).
- **Life style**: Massage on head, foot, Gentle pressing, Rest.

- **Yoga pranayam and Meditation**

1. Bhastrika

2. Kapaalbhati
3. Bahyapranayaam
4. Anulom vilom
5. Bhramari
6. Udgeeth
7. Ujjaayi
8. Pravan Jap

- **Asanas**

1. Light Exercise
2. Bhujangasana
3. Makrasana
4. Uttanpadasana
5. Sarvangasana
6. Shavasana.

Apathya (Don'ts)

- **Cereals:** New Rice, Maida.
- **Pulses:** pigeon pea (Arahar), peas, chickpea (chana).
- **Fruits & vegetables**: Potatoes, Tomatoes, Lemon, Orange, Banana, Ladyfinger, cauliflower.
- **Others**: Excessive use of oil and clarified butter, Betel nut, extra salt, puri, samosa, chaat, palora, butter, ice cream, packed junk food, tea, coffee. Heavy diet (chhole, Rajma, Urad, channa, Matar, soyabean, Brinjal, kathal), cold food, unsuitable–incompatible food, cheese, chocolate.
- **Strictly Avoidable**: oil spicy food, Nom-Veg & Nom-Veg. soup, ghee, excess salt, cold drinks, bakery puoducts. Alcohol, fast food, pickles, soft drinks, canned foods, junk foods, bakery products.
- **Life style:** Adhyasana (Repetition of food intake after meals, within 1-2 hours (repeating), excess exercise & anger, fear, hurry, worry, cold water, excessive intake of food, day sleeping, suppression of natural urges.
- **Yoga Pranayam and Meditation:** as per doctors advise.
- **Asanas:** as per doctors advise.

- **Advise:** 1cup herbal tea is issued or consumed by patients, in case if he/ she is habitual of tea and coffee (It is substitute for it).

8. EPILEPSY DISEASE

INTRODUCTION

It is the most common persistent neurological condition that is distinguishes by recurrent unprovoked epileptic seizures. These seizures are short-term signs or symptoms due to abnormal excessive or synchronous neuronal activity in the brain. It affects around 50 million people worldwide. It is defined as demonstrations of paroxysmal and disordered neuronal discharges in the brain. The different types of seizures can be recognizing on the basis of their clinical phenomenon. Though conventional medical treatments for epilepsy are not equally effective. A big large number of agents called anti-epileptic drugs are available to cure the epileptic conditions by inhibiting side effects on the body. The ideal and good drugs are effective to show anti-epileptic conditions of seizures. So, traditionally ayurvedic herbal drugs are used to cure and to inhibit the seizures condition in the patients.

It is a neurological disorder condition that has been marked by sudden re-current episodes of the sensory disturbance, abnormal, disorderly discharging of the brain's nerve cells, resulting in a non- permanent disturbance of motor, sensory, or mental function.

Classification: Seizures collapse under two categories and they are[83];

a) Focal or partial Seizures

b) Generalized Seizures

a) **Partial or focal seizures:** In this, seizures appear to result from abnormal activity in just one area of your brain; they're called as focal/partial seizures. Thus, these seizures categorized into two categories:

i) Focal seizures without loss of consciousness. Likely called as simple partial seizures, these seizures normally don't cause a loss of consciousness.

ii) Focal seizures with impaired awareness. It is likely called as complex partial seizures; these seizures have a change or loss of consciousness or awareness in a person.

b) Generalized seizures: In this, seizures appear to result from abnormal activity in all area of the brain; they are called as grand mal seizure and generalized seizures. Thus, these seizures can categorize into six categories.

i) Absence seizures, ii) Tonic seizures,

iii) Atonic seizures, iv) Clonic seizures,

v) Myoclonic seizures,vi) Tonic-clonic seizure

Herbal medicines treating Epilepsy disease

Sr. No	Plant Name	Family / common name	Chemical constituents	Plant Part	Uses	Remark
1	*Bacopa monneria* 	Scrophulariaceae Brahmi	Brahmin (Alka; oid) herpestin. Beutalic acid, stigmesterol, monnierin, hersaponin, bacoside A and B on acid.	Fresh leaves $ stem	As a nervine tonic, asthama, epilepsy, insanity(madness), Anti insomnia drug	Anticancer activity
2	*Ocimum sanctum* 	Lamiaceae/ Tulsi	Oleanolic acid, ursolic acid, eugenol, carvacrol etc.	Whole plant	Anti parkinson's drug, Cardioprotective etc.	Traditional medicine
3	*Rosa Domescana* 	Rosaceae/ Rose	Essential oil, vitamin, tannins, polyphenols, carotenoids and fatty acid.	Flower	Anti epilepsy agent, sweetened cold drinks, Anti-inflammatory, antioxidant properties	Laxative and anti-ageing properties
4	*Withania somnifera* 	Solanaceae. *Ashwagandha*	Alkaloids, anaferine, withanolides,withaferins, saponins, sitoindosides	Root	To treat cancer As free radical and anti oxidant For anxiety and depression	"adaptogen"
5	*Piper methysticum* 	Piperaceae/ Kava	Kavalactones, Potassium, nitrogen, phosphorus, magnesium	Root	Act as sedative and induces sleep, induces muscle relaxation, Psychotive effect	Kava affect the limbic system of the braine.

Alopathic medicines treating Epilepsy disease[84]

Srno	Drug Name	Category of drug	Dose	Mode of action	Uses	Remark
1	**Pheno-Barbitone**	Barbiturate	60mg, 1-3 times a day	GABA potentiation	The cheapest and least toxic antiepileptics.	High efficacy in generalized tonic-clonic seizures
2	**Primidone**	Deoxybarbiturate	250-500mg BD	Alters sodium and calcium channel transport	The cheapest and least toxic antiepileptics	Effect on essential tremor
3	**Phenytoin**	Hydantoin	100mg BD	Na+ channel blocker	First line Antiepileptic drug, generalized tonic-clonic, simple and complex partial seizures,	Producing neurotoxicity

4	**Carbamaze-Pine**	Iminostilbene	200-400 mg, TDS	Na+ channel blocker	Mostly used Antiepileptic drug	Useful in neur-opathic pain
5	**Diazepam**	Benzodiazepines	100mg/ daily	Facilitating inhibitory gamma amino butyric acid(GABA) transmission	Preferred in Acute panic states and anxiety associated with organic disease, Antiepileptic agent	Treat seizures

Diet chart for Epilepsy

Early Morning: Drink Lukewarm water 1-2 glass in empty Stomach, before Brushing teeth.

Diet plan

TIMING	DIET PLAN (VEGETARIAN)
Breakfast (08:30AM)	**1 Cup milk + 2-3 biscuit (Fibre Biscuits)/1 Daliya /poha/upma(sujji)/1Glass milk with Turmeric**/fruits (apple, papaya, pomegranate).
Lunch (12:30-1:30PM)	**1-2** thin chapati / Roti **(Multi grains Atta)+** 1 bowl rice (mand removed) + 1 bowl green vegetables (boiled) + 1 bowl Dal.
Snacks (5:30-6:00PM)	**1 Cup herbal tea 2-3 Fibre Biscuits /vegetable soup / 1 Glass milk with Turmeric powder.**
Dinner (7:00PM-8:00PM)	2-3 thin Chapati/Roti (**Multi grains Atta, patanjali)** + bowl green vegetables + 1 bowl moong Dal.

Pathya(Do's)

Cereals: Old rice, Daliya.

Pulses: Green gram (Moong daal), pigeon pea (Arhar).

Fruits & vegetables: Bottle gourd (Lauki), Ridge Gourd (Tori), pointed gourd (parwal), Bitter gourd (Karela), pumpkin (kaddu), seasonal Green vegetables, drumstick, cabbage, cauliflower, broccoli, spinach, beetroot, apple, mango, cherry, papaya, pomegranate.

Others: ginger, ghee, coconut, gud, caster, oil, Hing, Ajwain, Harad, alovera, sprouts, dry fruits, popcorn.

Life style: fasting, sleeping, rest, don't drive alone.

Yoga pranayam and Meditation

1. Bhatrika
2. Bahyapranayaam
3. Anulom Vilom
4. Bhramari
5. Udgeeth
6. Ujjaayi

7. Pravan Jap

Asanas

1. Pashchimottanasana 2.Sarvangasana 3. Uttanpadasana 4.Bhujangasana 5.Marktasan

Apathy (Don'ts)

Cereals: new Rice, Maida.

Pulses: Kidney beans, black garam, peas, chhole, Urad Dal.

Fruits & vegetables: Jack fruit, Brinjal, tomato, potato, orange.

Others: Curd, lemon, Kadhi, bakery products, junk foods, can foods, Excess salt, pori, samosa, chaat, pakoda, Butter, icecream.

Life style: Night awakening, Day sleeping, suppression of natural urges, smoking, stress, anger.

Yoga pranayam and Meditation: As per doctors advise.

Asanas: Avoid Utkad Asan (sitting). As per doctor advise.

Advice: 1 Cup herbal tea is issued or consumed by patients, in case if he/she is habitual of tea and coffee (It is substitute for it).

CONCLUSIONS

Traditional medicines are found to be very beneficial for the treatment of neurological disorders like migraine, epilepsy, Parkinson's, Anxiety, Huntigton's, Insomnia, Depression and Alzheimer. Many people are used herbal medicines for the treatment and alternative health care. All the neurological disorders are dangerous because nervous system is a system that controls all the function of body. If any problem is occurring in brain it harms all the function of whole body. Herbal medicines also cause side effects but lesser then the other medicines. In the neurological disorders mostly, those herbal plants are used which having the good therapeutic effect on brain like brahmi, jatamansi, mandookparni, Ashwagandha, haldi, ginseng, bakuchi etc.

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